A

Ph.D. SYNOPSIS ON

"STUDIES ON KINETICS AND MECHANISM OF OXIDATION OF ALIPHATIC ALCOHOLS BY BENZIMIDAZOLIUM FLUOROCHROMATE"

Submitted to

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VISHNUPURI, NANDED-431606.

For the Degree of

Doctor of Philosophy(Ph.D.)

In Chemistry (Faculty of Science & Technology)

Submitted by

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TITLE:- "STUDIES ON KINETICS AND MECHANISM OF OXIDATION OF ALIPHATIC ALCOHOLS BY BENZIMIDAZOLIUM FLUOROCHROMATE"

1) Introduction:-

The study of organic compounds is of immense importance both from mechanistic and synthetic point of view. Halochromates [1-5] have been used as mild and selective oxidizing reagent in synthetic organic chemistry.

A number of new Halochromates like Pyridinium Halochromate[6], Quinolinium Chlorochromate[7], 2-Bipyridinium Chlorochromates[8], Pyridinium Fluorochromates[9], Quinolinium Fluorochromates[10], Quinolinium bromochromate[11], pyridinium Chlorochromate[12], Imadazolium Fluorochromates[13] have been used to study the kinetics and mechanism of oxidation of various organic compounds. But a newly synthesized and developed oxidizing agent is Benzimidazolium Fluorochromates[14]. This reagent is more efficient and stronger oxidizing agent.

So, we are interested to select Benzimidazolium Fluorochromates as oxidizing agent for the proposed kinetic study.

2) Review of Literature:-

A survey of literature shows that, the kinetics of oxidation of Aliphatic Alcohols by various oxidizing reagents have been studied (Sharma & Baghmar, 2001; Banerji et.al., 1999, 2005, 2008; Jamel, 1999). Large number of Aliphatic Alcohols are either commercially available or can be early prepared. These seem to be no report on the oxidation of Aliphatic Alcohols by Benzimidazolium Fluorochromates. So in the present investigation, we will study the kinetics and Mechanism of oxidation of Aliphatic Alcohols by Benzimidazolium Fluorochromates.

3) Objectives of Research:-

The present study focuses on the study of kinetics and mechanism of oxidation of Aliphatic Alcohols by Benzimidazolium Fluorochromates.

The major objective of this research or investigation is to study the solvent effect for the substrates undergoing oxidation and to propose a suitable mechanism for the mechanism along with some kinetic aspects.

4) Methodology to be Adopted:-

The study of kinetics of Aliphatic Alcohols will be carrying out by Spectrophotometric method and during the experiment temperature will be maintained by Thermostatic water bath.

5) Importance of the Study:-

The oxidation of Alcohols to the corresponding Aldehydes and Ketones is still one of the most important transformations in organic synthesis. Alcohol oxidation is an important organic reaction. Primary Alcohols can be oxidizing either to Aldehydes or Carboxylic acids and secondary alcohols to ketones.

6) Proposed Work Plan / Formation and Structure of Study:-
(Year wise plan of work and target to be achieved)

The proposed research work requires a period of at least three years. Year-wise distribution is as shown below.

First Year:- Review of literature and preparation of Benzimidazolium Fluorochromates as an oxidizing reagent.

Second Year:- Oxidation reaction at different concentrations with respect oxidant, Substrate, solvent etc. will carry out.

Third year:- Study and calculation of different thermodynamic parameters related to kinetics will be carry out.

7) References:-

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